

## **ABSTRACT**

A noninvasive method and system are provided for assessing the performance of implanted actuators of semi or fully-implantable hearing aid systems. The invention utilizes an externally positioned measurement device to obtain a test  
5 measure of the electrical signal passing through an implanted actuator when driven by a test signal of predetermined characteristics. In one embodiment, the measurement device may comprise a pair of coils for measuring the magnetic field generated by an implanted actuator utilized to simulate the middle ear of a patient. The magnetic field strength is directly related to the amount of current  
10 passing through the actuator. In turn, such current is inversely related to the electrical impedance present at the implanted actuator. Such electrical impedance is directly related to the mechanical impedance present at the interface between the implanted actuator and middle ear of a patient. As such, by driving an implanted actuator at one or more predetermined frequencies the  
15 resultant magnetic field measures may be utilized to assess whether the implanted actuator is operative and whether a desired interface between the actuator and the middle ear of patient (e.g. the ossicular chain) is present.